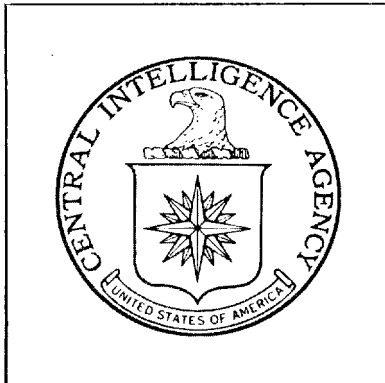


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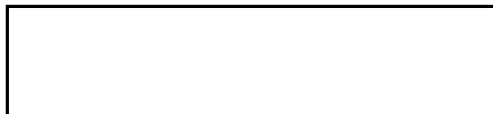
DIRECTORATE OF
INTELLIGENCE

Imagery Analysis Report

Chinese Ground Forces

Vehicle Storage Structures

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

CHINESE GROUND FORCES VEHICLE STORAGE STRUCTURES
SUMMARY

This report is a preliminary photographic analysis of Chinese ground forces vehicle storage structures. The findings indicate that it is possible to estimate from photography the numbers and types of vehicles stored under roof at Chinese ground forces installations by the same method which IAS previously developed for making similar estimates at Soviet ground forces installations. 1, 2/

Like the Soviets, the Chinese ground forces store wheeled and tracked vehicles in structures of different sizes. The widths of these structures and the widths of their vehicle bays can be used to judge whether the buildings were designed to house wheeled or tracked vehicles, the number of rows of vehicles stored, and the number of parking places in each row.

At Chinese ground forces installations, vehicle storage structures are designed for wheeled vehicles stored in one row; for wheeled or tracked vehicles in one row; and for wheeled vehicles in two rows. No building was found which stored tracked vehicles in more than one row, and none was found which housed both tracked and wheeled vehicles.

Most of the buildings studied fall into the category, which is ambiguous as to the type of vehicle housed. Bay widths and other factors must be brought to bear in these ambiguous cases. When bay widths can be seen, they are a very reliable indicator; no case was found of a wheeled vehicle shed with bays wider than feet, nor of a tracked vehicle shed with bays narrower than

Other factors can also be used to aid in assessing the numbers and types of vehicles stored under cover at Chinese ground forces installations. These factors include the observation of vehicles parked directly in front of storage buildings, vehicular trackage in the garaging area, and the presence of identical structures.

NOTE: This report was prepared in direct support of the Central Intelligence Agency.

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DISCUSSION

The numbers and types of vehicles housed at Chinese ground forces installations can be identified and counted on large-scale photography when stored in the open. Most units keep their vehicles stored under roof, however, and this precludes a direct assessment of vehicle holdings.

In order to develop a method for identifying the numbers and types of vehicles stored under roof, a total of 257 vehicle storage buildings at a total of 28 Chinese ground forces installations were analyzed. The selection of the examples depended solely upon the availability of excellent-quality photographic coverage from which accurate mensuration, identification of the number of vehicle bays, parking patterns, and the type of vehicle actually being stored could be ascertained either through direct observation or vehicular trackage. The examples are from seven of the 13 Chinese military regions, and they include installations occupied by tank, artillery and infantry units. (See Figure 1 for an example of a typical Chinese tank/assault gun regiment.)

Building Widths

The widths of Chinese vehicle storage structures provide clues as to the number of rows of vehicles they house, and as to whether the vehicles are wheeled or tracked.

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Of the 257 structures studied, 246 were between [redacted] wide and had vehicles stored in one row (Figure 2). The other 11 structures were between [redacted] and had vehicles stored in tandem.

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The buildings studied can be divided into three categories according to the relationship between their widths and the number of rows and type of vehicles stored inside them. Structures [redacted] less are designed for wheeled vehicles stored in one row, those [redacted] [redacted] tracked or wheeled vehicles stored in one row, and those [redacted] for wheeled vehicles stored in tandem. No structures were found which measured between [redacted] and none stored tracked vehicles in two rows.

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The breakdown of the study sample is as follows:

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<u>Building Width</u>	<u>No. of Bldgs., Vehicle Types, and No. of Rows</u>
Category I: [redacted] 120 buildings studied	118 had wheeled vehicles in one row 2 had tracked vehicles in one row
Category II: [redacted] 126 buildings studied	90 had tracked vehicles in one row 36 had wheeled vehicles in one row
Category III: [redacted] 11 buildings studied	11 had wheeled vehicles in two rows

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Bay Widths

The widths of the bays in the Chinese vehicle storage structures indicate the type of vehicles for which the building was constructed and the number of vehicles in each row.

Of the buildings studied, 165 contained wheeled vehicles and 92 contained tracked vehicles (Figure 3). All of the buildings housing wheeled vehicles had bays [REDACTED] 137 of them had bays between [REDACTED]. The bay widths for all buildings housing tracked vehicles ranged [REDACTED]

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The only installations found containing vehicle storage buildings with bay widths designed for tracked vehicles were those housing tank/assault gun units. No buildings were found which stored both tracked and wheeled vehicles.

Other Keys to Vehicles Stored

Although building widths and vehicle bay widths, when observed, are the most important criteria for judging types and numbers of vehicles stored in particular buildings, there are three other factors that often can be used. They are 1) identification of vehicles which are directly associated with a particular building; 2) identification of trackage associated with a particular building; and 3) the presence of identical structures.

The types and numbers of vehicles stored within buildings can usually be determined when vehicles are observed protruding from or parked directly in front of sheds. The spacing between these vehicles can often be used to determine the number of bays when bays are not directly observed. It should be noted, however, that vehicles are sometimes observed parked in neat rows abutting vehicle sheds but not in front of the bays. When these appear in the same location on repetitive coverage, it can be assumed they are permanently stored outside.

Vehicular trackage can often be used for identifying the types and numbers of vehicles stored in buildings. Because of the greater width and irregular turning radii of tracked vehicles, their trackage can be differentiated from that of wheeled vehicles on large-scale photography. The type of trackage leading from storage buildings indicates the vehicle type stored within, and in cases where series of tracks exist, can be used to determine the number of parking bays.

A vehicle storage and maintenance area often contains two or more identical vehicle sheds. It can be assumed that such buildings were built to house the same numbers and types of vehicles (Figure 1).

* Bay widths are computed by dividing the number of vehicle bays into the total length of the building.

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FIGURE 1. TYPICAL TANK/ASSAULT GUN REGIMENT, WU-CHING ARMY BARRACKS AL-1, CHINA.

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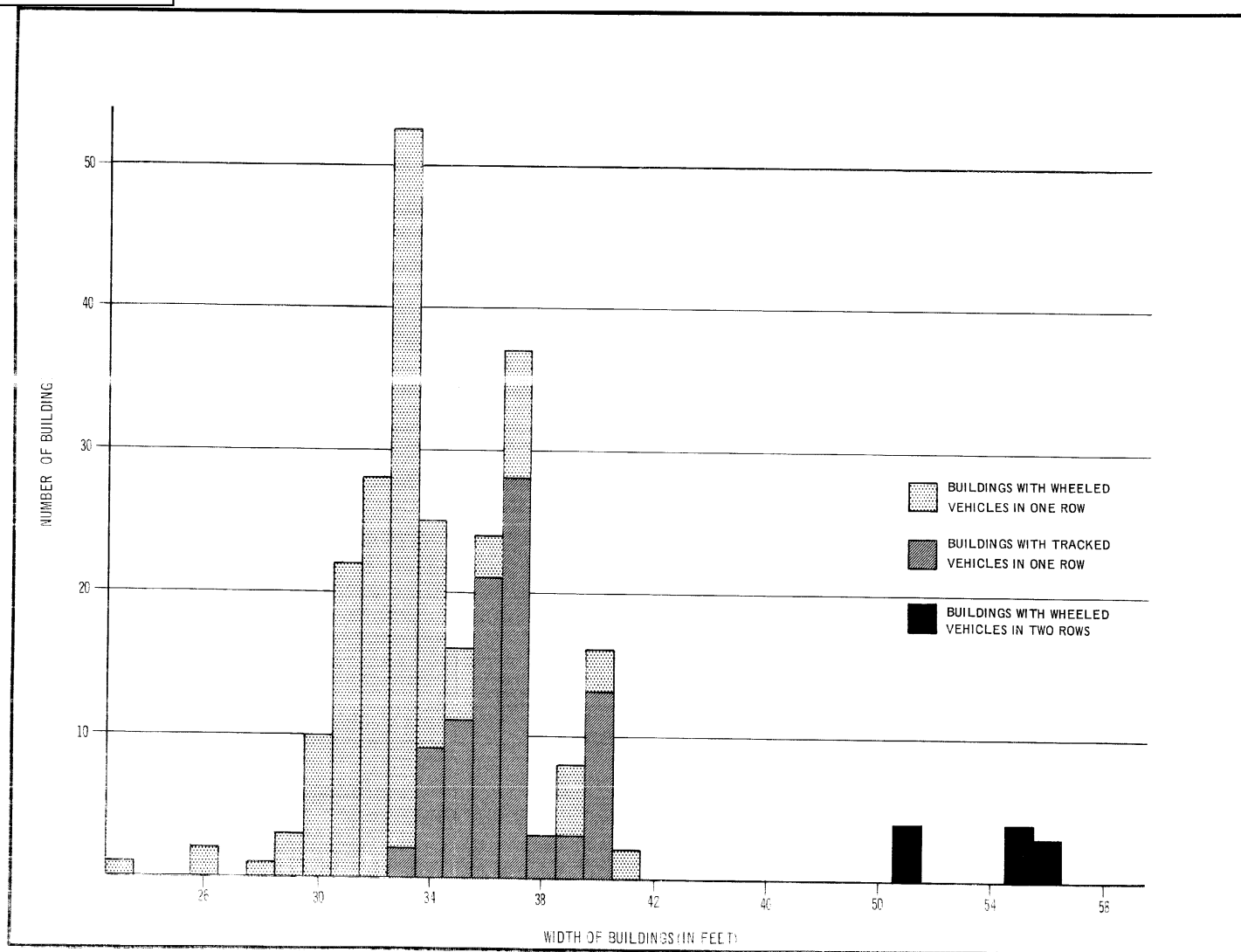


FIGURE 2. BUILDING WIDTHS OF CHINESE VEHICLE STORAGE STRUCTURES

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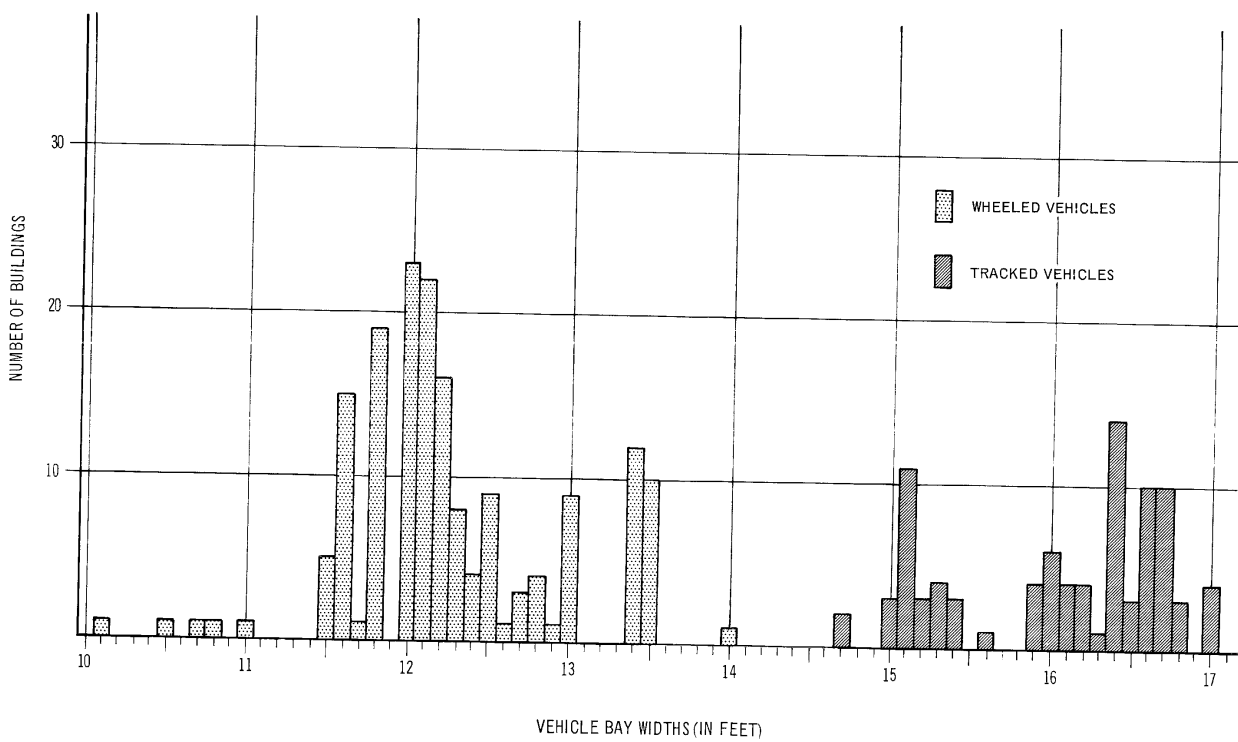


FIGURE 3. BAY WIDTHS OF CHINESE VEHICLE STORAGE STRUCTURES

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

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2. CIA. DDI/IAR 93010, Soviet Ground Forces Vehicle Storage Practices, October 1968 (TOP SECRET 

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Note: This photography is that used for Figure 1 only.

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VEHICLE STORAGE BUILDINGS USED IN BASE

Mil. Region	Installation	No. of Bldgs. & Dimensions	No. of Bays Ea.	Vehicle Type	Parking
Canton	Chang-ning-hsin-hsu A. Bks. AL-2	2 - 1 - 2 - 2 - 1 - 1 - 1 -	8 10 16 11 11 6***	Tracked Tracked Tracked Wheeled Wheeled Wheeled	Single Single Single Single Single Single
Canton	Huei-lin A. Bks. AL-1	2 - 4 - 1 - 2 - 1 -	13 10*** 7 6 12	Tracked Tracked Tracked Tracked Wheeled	Single Single Single Single Single
Kunming	Pu-erh A. Bks. N	6 -	12	Wheeled	Single
Nan-ching	Chu-hsien A. Bks. S AL-2	3 - 2 -	10*** 6***	Tracked Tracked	Single Single
Nan-ching	Wu-hsi A. Bks. Area 7	1 - 1 - 11 -	22 14 5***	Wheeled Wheeled Wheeled	Single Single Single
Nan-ching	Wu-hsi A. Bks. Area 4	3 -	10	Wheeled	Single
Nan-ching	Wu-hsi A. Bks. WSW AL-4	3 - 7 -	10 10***	Wheeled Wheeled	Single Single
Pei-ching	Han-tan A. Bks. AL-5	2 - 1 - 10 - 1 -	10 9 12 10	Wheeled Wheeled Wheeled Wheeled	Tandem Tandem Single Single
Pei-ching	Pei-hsiao-ying A. Bks. W	6 - 6 - 3 - 3 -	16 5 22 10***	Tracked Tracked Wheeled Wheeled	Single Single Single Single
Pei-ching	Pei-hsiao-ying A. Bks. SW AL-3	2 - 2 - 1 - 1 -	16 5 22 10***	Tracked Tracked Wheeled Wheeled	Single Single Single Single
Pei-ching	Ta-tung A. Bks. NW AL-3	3 - 2 - 2 - 1 - 1 - 1 -	10 6 13 13*** 11 9***	Tracked Tracked Wheeled Wheeled Wheeled Wheeled	Single Single Single Single Single Single

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* All dimensions are given in feet.

** Probable number of bays

*** Possible number of bays

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Mil. Region	Installation	No. of Bldgs. & Dimensions	No. of Bays Ea.	Vehicle Type	Parking
Pei-ching	Yang-fang A. Bks. AL-1	6	16	Tracked	Single
		6	5	Tracked	Single
		3	22***	Wheeled	Single
		3	10***	Wheeled	Single
Shenyang	Fu-hsien A. Bks. E AL-1	1	7***	Wheeled	Single
		12	6	Wheeled	Single
		1	5***	Wheeled	Single
		1	3***	Wheeled	Single
Shenyang	Chin-chou Military Bks.	5	18	Wheeled	Single
Shenyang	Hai-cheng A. Bks. E AL-2	2	16	Tracked	Single
		2	5	Tracked	Single
		1	22***	Wheeled	Single
		1	10***	Wheeled	Single
Shenyang	Hsing-cheng A. Bks. & Hq. 120th Inf. Div. AL-1	2	6	Tracked	Single
		3	10	Tracked	Single
		1	12**	Wheeled	Single
		1	10	Wheeled	Single
Shenyang	Shih-shan-chan A. Bks. NE AL-1	2	6**	Tracked	Single
		3	10	Tracked	Single
		1	11**	Wheeled	Single
Shenyang	I-hsien Inf. Supt. Area W	2	6	Tracked	Single
		3	10	Tracked	Single
Shenyang	Shih-shan-chan A. Bks. SW AL-3	12	6	Wheeled	Single
		1	7	Wheeled	Single
Shenyang	Sha-li-tu Inf. Div. Hq. & A. Bks. AL-1	12	6	Wheeled	Single
Shenyang	Pei-shan-cheng-chen A. Bks. E AL-2	12	6	Wheeled	Single
		1	5	Wheeled	Single
Isinan	Lai-yang A. Bks. AL-1	2	5	Tracked	Single
		2	16	Tracked	Single
		1	22**	Wheeled	Single
		1	10**	Wheeled	Single
Isinan	Lai-yang A. Bks. AL-2	2	5	Tracked	Single
		2	16	Tracked	Single
		8	5**	Wheeled	Single
		1	5**	Wheeled	Single
		3	6	Wheeled	Single
		1	3	Wheeled	Single
		1	6	Wheeled	Single
		1	6	Wheeled	Single
		3	6	Wheeled	Single

** Probable number of bays

*** Possible number of bays

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Mil. Region	Installation	No. of Bldgs. & Dimensions	No. of Bays Ea.	Vehicle Type	Parking
Tsinan	Liu-chia-cheng-chang A. Bks. AL-1	1 3 4	40 10 10***	Wheeled Wheeled Wheeled	Single Single Tandem
Tsinan	Chiao-nan A. Bks. AL-2	2	6	Tracked	Single
Tsinan	Chi-nan A. Bks. SW AL-1	3 4	10 8	Tracked Tracked	Single Single
Wu-han	Chueh-shan A. Bks. AL-2	2 2 1	9 13** 14**	Tracked Wheeled Wheeled	Single Single Tandem
Wu-han	Hsin-hsiang A. Bks. AL-1	2 2	9 18	Wheeled Wheeled	Tandem Tandem

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